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Regional Innovation Cluster Strategic Action Plan 2011

Photos on cover: Livermore chemists Christopher Mundy, at left, and Will Kuo view a simulation of water molecules (photo courtesy Lawrence Livermore National Laboratory); solar array installation in the shape of an "A" at The Athenian School in Danville provides 60 percent of the school's electricity needs (photo by Judyth Collin/The Athenian School); and operating turbines at the Montezuma Wind energy project in Solano County (photo by Molly Walker).

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Regional Innovation Cluster Strategic Action Plan

Talent, ideas, collaboration, and connectivity have become the main competitive advantages in the new global economy. The Greater East Bay has emerged as a place where these elements combine to fuel a regional innovation cluster unrivaled in its potential and vitality.

Economic regions are defined not by political boundaries, but by connectivity from industry concentrations, common labor markets, and supporting infrastructure.[1] The Greater East Bay Regional Innovation Cluster extends in a broad crescent from Livermore on the southeast to the northern Silicon Valley on the southwest, with Oakland/Berkeley/Richmond in the center and Fairfield/Vacaville/Davis on the northeast. The region supports two world-class research universities, several leading research institutions, three national labs, corporate research centers, and a cluster of young innovative firms and established companies. This concentration of intellectual capital will drive economic growth supported by knowledge-based infrastructure and collaborative networks.

Industry clusters act as regional "innovation ecosystems" that connect research and innovation activities with manufacturing scale-up, technology transfer and commercialization, a skilled workforce, entrepreneurs, and venture capital. Industry clusters create enduring competitive advantages for cluster members. Regional innovation clusters transform regional economies by accelerating innovation.

Clean energy and water technology clusters have emerged with the growing green economy that will help drive the regional economy in the 21st century.[2, 3] Regional economic development organizations will lead the way in developing the Greater East Bay into a global research and manufacturing center. Workforce partners have come together to support the growth and development of this emerging industry cluster and create low-, middle-, and high-skilled jobs.

New strategies are required to support the economic vitality of the three-county region. In early 2010, John Fernandez, Assistant Secretary of Commerce for Economic Development, noted: "The old paradigm was piecemeal investment—project by project. The dots never got connected. The conversation began and ended with, 'we need this one, critical piece of infrastructure.' Under the new paradigm, the conversation begins with questions: 'What are our assets as a region? What do we think we can become over the next ten years? And, how can we get there?'"

The purpose of this Strategic Action Plan is to provide a framework for the establishment of an alliance of interested stakeholders to promote regional innovation clusters focused on clean energy and water technology.

[1] Collaborative Economics, ***"The Innovation Driven Economic Development Model,"*** September 2008
[2] Craft Consulting Group, ***"East Bay Green Economy Industry Cluster Study: Building a Sustainable Economy Based on Clean Technology,"*** July 2008
[3] Collaborative Economics, ***"Solano County's Energy Cluster Profile,"*** September 2009

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"The old paradigm was piecemeal investment—project by project. The dots never got connected. The conversation began and ended with, 'we need this one, critical piece of infrastructure.'

"Under the new paradigm, the conversation begins with questions: 'What are our assets as a region? What do we think we can become over the next ten years? And, how can we get there?'"

John Fernandez, US Assistant Secretary of Commerce for Economic Development

Vision, Mission Statement, and Strategy

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innovate incubate invest

Vision

Become a globally recognized innovation and manufacturing center focused on clean energy and water technology that drives regional economic growth and job creation through innovation, incubation, and investment.

Mission Statement

Accelerate innovation, manufacturing scale-up, and market adoption through regional collaboration, incubation, and cluster development. By building upon our foundation of cutting edge research in clean energy and water technology, the regional innovation cluster will drive the regional economy, create high-quality jobs, and address global environmental concerns.

Strategy

To achieve our vision we will implement a regional innovation cluster strategy that focuses on:

- Research and innovation
- Entrepreneurship and investment
- Talent and workforce development
- Manufacturing and infrastructure
- Market transformation and expansion

The Greater East Bay Region

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"Regional innovation clusters are a proven way to create jobs and grow the economy. They are geographic concentrations of firms and industries that do business with each other and have common needs for talent, technology, and infrastructure."

U.S. Economic Development Administration website: www.eda.gov

Regional Assets: Research Institutes

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Berkeley Water Center
California Biomass Collaborative
California Wind Energy Collaborative
Center for Watershed Sciences
Joint Genome Institute
Energy Bioscience Institute
Joint BioEnergy Institute
Lawrence Berkeley National Laboratory
Lawrence Livermore National Laboratory
Sandia National Laboratories, California
UC Berkeley
UC Davis
UC Davis Energy Efficiency Center
UC Davis Energy Institute
USDA Western Regional Research Center

Research Institutes
Universities

Regional Assets: Clean Energy Companies

Acro Energy Technologies Corp.
ABB Inc.
Amyris, Inc.
Aurora Algae
Bay Biodiesel, LLC
Blue Sky Bio-fuels (subsidiary of Sirona Fuels)
Borrego Solar
BrightSource Energy
Brobeck Solar Energy
California Switchgear & Solar, Inc.
Canadian Solar Inc.
Chevron Technology Ventures
Cool Earth Solar
CytoCulture International, Inc.
Deeya Energy
EcoNexus
enXco, Inc. (an EDF EN company)
ET Solar Group
Exsolarent Energy Group Inc.
First Source Solar Systems
Fulcrum BioEnergy
Green Tech Power Group
GreenVolts, Inc.
GWF Energy LLC
Halus Power Systems
HelioDynamics, Inc.
Heliodyne, Inc.
Los Medanos Energy Center (owned and operated by Calpine)
Mendel Biotechnology Inc.
Oorja Protonics
Optimal Technologies (USA), Inc.
OptiSolar
Orion Energy, LLC (subsidiary of BP Alternative Energy)
Pacific SolarTech
PolyPlus Battery Co.
RedOx Biofuels (subsidiary of AIC)
Seeo
Sequesco
Simbol Materials
Sky Power Solar
SPG Solar (Solar Insights)
Solar Millennium, LLC
Solar University, Inc.
Solaria Corporation
Solyndra, Inc.
Sun Light & Power Company
Sungevity
SunPower
SunWater Solar
Sustainable Technologies
UltraCell Corporation
Wadham Energy, Limited Partnership (a subsidiary of Enpower Corp.)
Water & Energy Management Co.
Xtreme Energetics

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The companies identified above include only core businesses in the clean energy cluster. Specialized vendors, suppliers, and service providers that make up the complete value chain are not listed.

Clean Energy Companies

Regional Assets: Water Technology Companies

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APTwater Inc. (formerly known as Applied Process Technology)

Douglas Environmental

Dow Water & Process Solutions (affiliated company of The Dow Chemical Company)

Energy Recovery Inc.

Ewing Irrigation Products

FLSmidth Pneumapress

FogBusters, Inc.

GE Power & Water

ITT Water & Wastewater U.S.A., Inc.

NanOasis, Inc.

New Logic Research, Inc.

Porifera, Inc.

Purfresh, Inc.

QED Environmental Systems (part of TestAmerica Holding Company)

Shape Inc.

Synagro Technologies, Inc.

Veolia Water North America - West LLC

Westates Carbon (part of Siemens' Water Technologies Division)

The companies identified above include only core businesses in the water technology cluster. Specialized vendors, suppliers, and service providers that make up the complete value chain are not listed.

Water Technology Companies

Regional Assets: Skilled Workforce

Workforce Development

Alameda County WIB
Contra Costa WDB
Oakland WIB
Richmond WIB
Solano WIB

Public Colleges and Universities

Berkeley City College
Cal State East Bay
Chabot College
College of Alameda
Contra Costa College
Diablo Valley College
Laney College
Los Medanos College
Las Positas College
Merritt College
Ohlone College
Solano Community College
UC Berkeley
UC Davis

Community Colleges
Universities
WIBs

Regional Innovation Cluster Goals, Objectives, and Actions

Goal: Enhance the region's competitive advantage through development of innovation clusters that drive regional economic growth and job creation.

Objective A:	**Raise the region's profile and visibility.**
Action Step A1:	Create a community of like-minded supporters to help promote the region's innovation clusters and advocate on behalf of the cluster and individual companies.
Action Step A2:	Hold educational conferences, trade shows, and forums to advance new technologies.
Action Step A3:	Identify regional champions, evangelists, and other enthusiasts who can help promote the region and drive the market for cluster company products and services.
Action Step A4:	Hold national and international conferences to spotlight region as a global center for clean technology.
Objective B:	**Establish a sustainable regional collaborative to support, promote, and market innovation, research, technology transfer, and cluster development activities in the region.**
Action Step B1:	Identify an existing entity or establish a new non-profit organization to facilitate cluster development and interaction, promotion of the region and cluster companies, and the development and implementation of a regional innovation strategy.
Action Step B2:	Obtain commitments from stakeholders, and local and regional partners, to support organization.
Action Step B3:	Identify and secure necessary funding to support cluster initiatives and activities.
Objective C:	**Identify and promote key regional assets.**
Action Step C1:	Identify a regional innovation eco-system and prepare an asset map to inform and guide innovation cluster strategies that strengthen the region's competitive position in the global economy.
Action Step C2:	Create an online directory of cluster companies in the region (including suppliers, vendors, contractors, engineering firms, training organizations, industry associations, venture capital firms, networking organizations, etc.).
Action Step C3:	Create an online directory of innovation research and training assets, including colleges, community colleges, universities, national laboratories, and research institutes.

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"The reality of the state economy is that it's made up of regional economies. And, if we're going to optimize California's economic performance, we've got to work within the existing regional collaborative frameworks and recognize the relative strengths of each of the regions....

"Our strengths vary from region to region based on the industry clusters of each individual economy. The Greater East Bay has a wealth of leading university and research institutes upon which to build a competitive advantage in clean energy and water technology."

Sunne Wright McPeak, President and CEO, California Emerging Technology Fund, and Former Secretary of California Business, Transportation and Housing Agency

Regional Innovation Cluster Goals, Objectives, and Actions

Objective D:	**Establish a regional brand image and develop a global identity.**
Action Step D1:	Create name, logo, and tagline.
Action Step D2:	Identify and articulate value proposition.
Action Step D3:	Develop key messages for incorporation into all marketing collateral, website, public relations, and promotional materials.
Objective E:	**Market the region.**
Action Step E1:	Develop and implement a regional marketing plan.
Action Step E2:	Develop website.
Action Step E3:	Develop marketing collateral.
Action Step E4:	Develop public relations and media releases.
Action Step E5:	Develop social media such as YouTube videos and an online community to reach the influencers and thought leaders (http://directmarketingobservations.com/2009/07/29/10-blended-social-media-marketing-strategies-a-company-might-want-to-consider).
Objective F:	**Promote the development of a skilled and highly qualified workforce to meet industry needs.**
Action Step F1:	Support the growth and development of local community college programs to prepare the incumbent workforce for emerging jobs and occupations in the cleantech sector.
Action Step F2:	Encourage the development of a future workforce pipeline by promoting critical science, technology, engineering, and math education (STEM) curriculum across the education spectrum from K-12 through higher education.
Objective G:	**Develop collaborative networks and promote best practices.**
Action Step G1:	Create and build synergy with other business organizations in the region (Chambers, Green Corridor, Innovation Tri-Valley, Northern Silicon Valley Partnership, etc.) to promote the region's mutual interest in clean energy and water technology.
Action Step G2:	Engage and support local iHubs and innovation partnerships.
Action Step G3:	Investigate and adopt best practices.

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"The future of American prosperity and global competitiveness relies on critical jobs— creating investments in research and clean energy. Innovative public and private partnerships like this program are essential in helping America achieve energy independence and create good jobs. If America is going to make it, we must 'Make It In America' and work together to bring back the good manufacturing jobs that are the backbone of America's middle class. This regional innovation initiative is a great start in that direction."

Congressman John Garamendi, 10th Congressional District

Cluster Goals and Objectives Implementation Plan

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Goals/Objectives	Actions	Timeline	Resources	Responsibility
A: Raise the region's profile and visibility.	A1: Create a community of like-minded supporters to help promote the region's innovation clusters and advocate on behalf of the cluster and individual companies.	Ongoing	EDC staff	EDCs and industry
	A2: Hold educational conferences, trade shows, and forums to advance new technologies.	Ongoing	EDC staff	EDCs and industry
	A3: Identify regional champions, evangelists, and other enthusiasts who can help promote the region and drive the market for cluster company products and services.	**Priority #1**	EDC staff	EDCs
	A4: Hold national and international conferences to spotlight region as a global center for clean technology.	Ongoing	Sponsors and attendees	EDCs and industry
B: Establish a sustainable regional collaborative to support, promote, and market innovation, research, technology transfer, and cluster development activities in the region.	B1: Identify an existing entity or establish a new non-profit organization to facilitate cluster development and interaction, promotion of the region and cluster companies, and the development and implementation of a regional innovation strategy.	**Priority #1** March–May 2011	WIB grant	EDCs
	B2: Obtain commitments from stakeholders, and local and regional partners, to support organization.	**Priority #1** March–April 2011	Membership dues and funding from participating stakeholders	EDCs
	B3: Identify and secure necessary funding to support cluster initiatives and activities.	April–Dec 2011	State and federal grants	New organization
C: Identify and promote key regional assets.	C1: Identify a regional innovation ecosystem and prepare an asset map to inform and guide innovation cluster strategies that strengthen the region's competitive position in the global economy.	July–Dec 2011	WIB grant	EDCs
	C2: Create an online directory of cluster companies in the region (including suppliers, vendors, contractors, engineering firms, training organizations, industry associations, venture capital firms, networking organizations, etc.).	**Priority #1** June–July 2011	Grant	EDCs
	C3: Create an online directory of innovation research and training assets, including colleges, community colleges, universities, national laboratories, and research institutes.	**Priority #1** April 2011	WIB grant	EDCs

Our goal is to enhance the region's competitive advantage through development of innovation clusters that drive regional economic growth and job creation.

Cluster Goals and Objectives Implementation Plan

Goals/Objectives	Actions	Timeline	Resources	Responsibility
D: Establish a regional brand image and develop global identity.	D1: Create name, logo, and tagline.	Dec 2010–Feb 2011	WIB grant	EDCs
	D2: Identify and articulate value proposition.	Jan–Mar 2011	WIB grant	CCEP
	D3: Develop key messages for incorporation into all marketing collateral, website public relations, and promotional materials.	Jan–Mar 2011	WIB grant	CCEP
E: Market the region.	E1: Develop and implement a regional marketing plan.	Mar–June 2011	WIB grant	EDCs
	E2: Develop website.	Feb–May 2011	WIB grant	EDCs
	E3: Develop marketing collateral.	Mar–June 2011	WIB grant	EDCs
	E4: Develop PR and media releases.	Jan–June 2011	WIB grant	EDCs
	E5: Develop social media strategy and materials such as YouTube videos and an online community to reach influencers and thought leaders.	Mar–Dec 2011 Ongoing	RICO grant, industry, grants and membership fees	EDCs and new organization
F: Promote development of a skilled and highly qualified workforce to meet industry needs.	F1: Support the growth and development of local community college programs to prepare the incumbent workforce for emerging jobs and occupations in the cleantech sector.	Ongoing	EDA grant	EDCs and new organization
	F2: Encourage the development of a future workforce pipeline by promoting critical science, technology, engineering and math education (STEM) curriculum across the education spectrum from K-12 through higher education.	Ongoing	Existing staff and membership fees	EDCs and new organization
G: Develop collaborative networks and promote best practices.	G1: Create and build synergy with other business organizations in the region (Chambers, Green Corridor, Innovation Tri-Valley, Northern Silicon Valley Partnership, etc.) to promote the region's mutual interest.	Mar–Dec 2011	Existing staff and membership fees	EDCs and new organzation
	G2: Engage and support local iHubs and innovation partnerships.	Mar–Dec 2011	Existing staff and membership fees	EDCs and new organization
	G3: Investigate and adopt best practices.	Mar–Dec 2011	Existing staff and membership fees	EDCs and new organization

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"The Regional Innovation Cluster is being established to increase regional cooperation and capitalize on the economic strengths, entrepreneurial drive, and strong values at play in promoting clean technology, renewable energy, and water technology in the region. We are grateful to the Workforce Development Board, our funder, and inspired by the many individuals and businesses that have stepped up to drive this initiative and ensure a strong economic future for our region."

Linda Best, President and CEO, Contra Costa Council, and Executive Director, Contra Costa Economic Partnership

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Clean Energy Cluster

Photo on reverse: In 2006, Contra Costa Community College District partnered with Chevron Energy Solutions on a major energy-conservation program that included a 3.2-MW solar power generation system, comprising 18,000 photovoltaic solar panels on 34 parking canopies in six parking lots at Contra Costa College, Diablo Valley College (pictured) and Los Medanos College. (Photo courtesy Contra Costa Community College District)

Clean Energy Goals, Objectives, and Actions

Goal #1: Become the leading center for clean energy innovation and incubation.

Objective 1.1: Expand clean energy research and development (R&D) activity at regional universities, national laboratories, and corporate research facilities

Action Step 1.1.1: Foster innovation in the clean energy sector by supporting local research institutions that are competing for research grants.

Action Step 1.1.2: Identify and advocate for state and federal funding to expand innovation infrastructure from basic research to pilot plants, demonstration projects, and full-scale commercialization

Action Step 1.1.3: Support public-private R&D partnerships and clean energy sponsored research.

Action Step 1.1.4: Encourage local universities and national labs to focus on applied research that will accelerate large-scale deployment of clean energy technologies.

Action Step 1.1.5: Advocate for increased Department of Energy funding to translate basic research into practical technologies that will attract investors who are willing to finance and entrepreneurs who want to build companies; funding options would include joint public-private sector grants and loan guarantees for demonstration projects.

Objective 1.2: Develop and execute a strategy to accelerate the transfer of innovative clean energy technologies into the marketplace.

Action Step 1.2.1: Facilitate university/research lab/industry collaboration to improve the technology transfer and commercialization process, working closely with entrepreneurs and the investment community.

Action Step 1.2.2: Support technology demonstration and scale-up projects.

Action Step 1.2.3: Facilitate university/research lab/industry interaction and cooperation by linking scientists and engineers with economic development efforts and business development experts.

Action Step 1.2.4: Develop online database of cluster companies, suppliers, specialized vendors, contractors, and university and research lab tech transfer offices.

Objective 1.3: Capture innovation locally.

Action Step 1.3.1: Assist local companies and entrepreneurs in acquiring locally developed technologies by connecting them with regional university and research lab tech transfer offices, with support from regional economic development organizations and Small Business Development Centers.

Action Step 1.3.2: Proactively encourage companies and entrepreneurs using locally developed clean energy technologies (solar, wind, advanced biofuels, geothermal, waste-to-energy, battery storage, fuel cells, co-generation, and smart grid) to locate in the Greater East Bay by working with university and research lab tech transfer offices in the early stages of a company's due diligence process.

Action Step 1.3.3: Connect entrepreneurs with investors, local financial incentives, and economic development programs.

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Research and innovation

"An investment in knowledge always pays the best interest."

Ben Franklin, statesman and inventor

Clean Energy Goals, Objectives, and Actions

Objective 1.4: Support clean energy cluster growth and expansion.

Action Step 1.4.1: Identify civic and industry leaders to promote the region and cluster development from basic research to pilot plants, demonstration projects, and full-scale commercialization.

Action Step 1.4.2: Promote the region's competitive advantages as a location for clean energy technology start-up, early stage, and established companies.

Action Step 1.4.3: Identify gaps in the value chain and implement programs designed to attract start-up firms, private research organizations, suppliers, specialized vendors, and other complementary organizations and associations.

Action Step 1.4.4: Build and expand knowledge networks that bring together entrepreneurs, scientists, investors, business development, and industry leaders through monthly forums, quarterly events, and other cluster activities to spur innovation and productivity growth.

Action Step 1.4.5: Establish a referral network of specialized service providers and investors that can assist with tech transfer, marketing, equity financing, regulatory approvals, and export assistance.

Objective 1.5: Develop collaborative networks and promote best practices.

Action Step 1.5.1: Investigate and adopt best practices to encourage the formation and expansion of a regional clean energy cluster by building on existing assets, expanding innovation infrastructure, developing collaborative networks, incubating start-up companies and technologies, and attracting suppliers, specialized service providers, scientists, and engineering talent. Examples of clean energy centers include:

Maryland Clean Energy Center: www.mdcleanenergy.org
New England Clean Energy Council: www.cleanenergycouncil.org
Florida Clean Energy Cluster: www.eflorida.com
Northern Colorado Clean Energy Cluster: www.nccleanenergy.com
Cleantech San Diego: www.cleantechsandiego.org

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"We are breaking down the silos through the process of creating a strategic action plan for our Regional Innovation Cluster. What we are doing in this region will have national implications for our children, who are holding us accountable for their future. Implementing the initiatives set forth in this plan comes next, and I look forward to it."

Bobby Ram, Director, Global Community Relations, SunPower Corporation, and Chair, Clean Energy Cluster

Clean Energy Goals, Objectives, and Actions

Goal #2: Develop a skilled workforce that meets the needs of industry and helps drive the regional economy.

Objective 2.1: Educate and train a skilled workforce to meet industry needs.

Action Step 2.1.1: Advocate for increased financial support for science and engineering programs at regional colleges.

Action Step 2.1.2: Engage companies in hiring and creating internships to support the pipeline training being done through local high schools, community colleges, Workforce Development Boards, and universities.

Action Step 2.1.3: Engage industry, labor, and academia to create tool libraries to assist students and/or new career employees.

Objective 2.2: Develop workforce training programs to meet industry needs.

Action Step 2.2.1: Support the growth and development of local community college programs to prepare the incumbent workforce for emerging jobs and occupations in the clean energy sector (including solar, wind, biofuels, storage, smart grid, waste-to-energy, fuel cell, etc.).

Action Step 2.2.2: Establish a clean energy jobs and training center in collaboration with the One-Stop Career Centers, WIBs, community colleges, and industry, e.g., the Cleantech Innovation Center at Oroville, California (www.cicoroville.org).

Action Step 2.2.3: Conduct survey of local clean energy employers regarding workforce hiring needs to identify the in-demand occupations and skills from R&D to sales that will be required to support the growth of local clean energy companies.

Objective 2.3: Prepare future workforce pipeline.

Action Step 2.3.1: Accelerate and support the adoption of rigorous science, technology, engineering, and math (STEM) curricula in the K-12 system, which connect to post-secondary education and training, and lead to high-demand, sustainable-wage jobs in the region's 21st century workforce.

Action Step 2.3.2: Establish a state polytechnic university in the region with degree and certificate programs designed around clean energy.

Action Step 2.3.3: Establish a clean energy/renewable energy systems degree and certificate programs at Cal State East Bay (CSUEB) similar to clean energy certificate programs at Cal Poly Pomona, Humboldt State University's Schatz Energy Research Center, and Oregon Institute of Technology's Bachelor of Science in renewable energy systems.

Objective 2.4: Attract high caliber talent to meet industry needs.

Action Step 2.4.1: Create linkages between education, industry, and research labs to anticipate new training needs and career opportunities.

Action Step 2.4.2 Encourage industry and research labs to provide work experience, internships, and training for students attending local degree and certificate programs in renewable energy.

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Talent and workforce development

"Clean energy breakthroughs will only translate into clean energy jobs if businesses know there will be a market for what they're selling. So tonight, I challenge you to join me in setting a new goal: by 2035, 80% of America's electricity will come from clean energy sources. . . ."

US President Barack Obama, 2011 State of the Union Address

Clean Energy Goals, Objectives, and Actions

Goal #3: Develop and expand clean energy manufacturing and infrastructure in the region.

Objective 3.1: Ensure region is a competitive location for clean energy companies.

Action Step 3.1.1: Assist manufacturers in locating and expanding their production facilities in the region.

Action Step 3.1.2: Identify and address key facility and location requirements for each clean energy market segment in the region.

Action Step 3.1.3: Foster locations within the region for clean energy manufacturing.

Action Step 3.1.4: Promote a supportive public policy environment—including regulatory environment and market incentives—that is competitive with other regions targeting clean energy technology firms.

Action Step 3.1.5: Develop a network of clean energy entrepreneurs, industry leaders, researchers, and investors.

Objective 3.2: Identify tax credits and other financial incentives to attract and retain clean energy manufacturing.

Action Step 3.2.1: Advocate for federal and state tax credits and other financial incentives to help electric vehicle and alternative fuel vehicle manufacturers expand their manufacturing capacity in the region.

Action Step 3.2.2: Develop demonstration plant and pilot projects, e.g., San Jose's Green Vision Clean Energy Showcase (http://energy.sanjoseca.gov/solar/tour.asp).

Action Step 3.2.3: Identify tax credits and financial incentives for clean energy manufacturing.

Action Step 3.2.4: Amend project approval process for construction of clean energy manufacturing facilities to reduce time, cost, complexity, and uncertainty.

Objective 3.3: Provide business development assistance to entrepreneurs and new enterprises.

Action Step 3.3.1: Provide incubation and business acceleration services for start-up and early-stage clean energy companies.

Action Step 3.3.2: Hold venture forums and business plan competitions to expose equity investors and venture capital firms to local start-up and early-stage clean energy companies.

Action Step 3.3.3: Provide entrepreneurship training through local Small Business Development Centers, community colleges, and four-year colleges.

Objective 3.4: Build alternative energy infrastructure.

Action Step 3.4.1: Encourage public sector to install electric vehicle charging stations and biofuels filling stations in their corporate yards, public parking garages, and new development projects.

Action Step 3.4.2: Develop a uniform, efficient, low-cost permitting process for clean energy projects and installations.

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Manufacturing and infrastructure

"Investments in clean energy produce two to three times as many jobs per dollar as gas, oil, or coal. And dollars invested in clean energy tend to stay in California, instead of going to other states or other countries. . . . The transition to clean energy is vital not only to our environment, but to our economic future as well."

California Governor Jerry Brown, speaking to technology executives at the Silicon Valley Leadership Group in Mountain View, 2010

Clean Energy Goals, Objectives, and Actions

Goal #4: Expand investment and funding in clean energy.

Objective 4.1: Ensure adequate capital for clean energy projects.

Action Step 4.1.1: Identify and provide access to investment capital to support business enterprises at every stage of development.

Action Step 4.1.2: Identify and develop relationships with venture capital firms investing in clean energy.

Action Step 4.1.3: Hold venture forums to create awareness among investment community and to link local entrepreneurs with potential investors.

Objective 4.2: Attract federal and state funding for early-stage companies.

Action Step 4.2.1: Explore and pursue federal regional innovation cluster grant opportunities (DOE, EDA, SBA, DOL).

Action Step 4.2.2: Investigate state, local, and private foundation grants and other funding options (EPA, Energy Cluster Program, BAAQMD, CARB, state WDB, etc).

Action Step 4.2.3: Retain a knowledgeable firm or individual to assist with identifying and securing grant opportunities.

Action Step 4.2.4: Advocate for Small Business Innovation Research (SBIR) and National Science Foundation (NSF) funding for start-up and early-stage companies to translate their innovative ideas into commercially viable products and assist them in applying for SBIR grants.

Action Step 4.2.5: Assist entrepreneurs in applying for federal Small Business Technology Transfer (SSTR) grants.

Objective 4.3: Identify and establish relationships with banks that are knowledgeable about the clean energy sector.

Action Step 4.3.1 Identify and meet with regional banks regarding the needs of the clean energy sector.

Action Step 4.3.2 Encourage banks to develop loan programs for business expansion and equipment purchases to meet the growth needs of clean energy companies.

Objective 4.4: Foster an entrepreneurial culture and support entrepreneurship training programs.

Action Step 4.4.1: Establish a cleantech business incubator focused on using locally developed technologies, clean energy startups, and early-stage companies.

Action Step 4.4.2: Provide entrepreneurship training through local SBDCs, community colleges, and four-year colleges.

Action Step 4.4.3: Hold forums for workforce agencies and industry to interact.

Action Step 4.4.4: Connect entrepreneurs to local resources, specialized service providers, investment capital, and marketing opportunities.

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Entrepreneurship and investment

Solar panels on FedEx Building at Oakland International Airport (photo courtesy Port of Oakland)

"In 2010 California attracted well over half, 56.2%, of all the national venture investment in clean energy and the Bay Area attracted 86.2% of the amount invested in California companies. Looking more closely at the Bay Area, the East Bay's $355.5 million amounted to 42.6% of the Bay Area's total, or 20.6% of the national total, indicating the East Bay's strong leadership in this important, emerging industry. It would not be a stretch to say that the East Bay is the 'HEART of the hub of the epicenter' of the emerging clean energy industry. "

Robert Sakai, Technology & Trade Director, East Bay Economic Development Alliance

Clean Energy Goals, Objectives, and Actions

Goal #5: Expand market opportunities and build consumer awareness for clean energy.

Objective 5.1: Identify early adopters and projects.

Action Step 5.1.1: Survey public sector (counties, cities, public school districts, community college districts, colleges, water and wastewater agencies, transit districts) regarding future plans for alternative energy projects and potential interest in an aggregated purchasing program.

Action Step 5.1.2: Survey public housing authorities, non-profit housing developers, and redevelopment agencies regarding future plans or interest in alternative energy projects.

Action Step 5.1.3: Survey commercial real estate developers, building owners, and property managers regarding future plans or interest in energy efficiency and alternative energy projects.

Action Step 5.1.4: Identify specific procurement programs, resources, financing programs, rebates, and incentives.

Objective 5.2: Create a favorable financial environment for investment in and the purchase/ installation of clean energy technologies.

Action Step 5.2.1: Support state and federal tax incentives for investment in or the purchase/installation of clean energy technologies.

Action Step 5.2.2: Work with industry and government leaders to develop financial incentives and financing programs for businesses and consumers to purchase clean energy technologies.

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Market transformation and expansion

"The emerging clean energy economy is creating well-paying jobs in every state for people of all skill levels and educational backgrounds. This emerging sector is poised to expand significantly, driven by increasing consumer demand, venture capital infusions, and federal and state policy reforms."

The Pew Charitable Trusts website
http://bit.ly/R1RJU

Clean Energy Goals, Objectives, and Actions

Objective 5.3: Promote a supportive public policy environment that expands market demand.

Action Step 5.3.1: Encourage public sector to adopt "buy local" policies, which are designed to ensure competitive pricing, boost local economies, foster sustainable development, reduce greenhouse gas emissions, create local jobs, and provide opportunities for small businesses consistent with state policy.

Action Step 5.3.2: Establish an aggregated clean energy purchasing program similar to the model developed by Joint Venture Silicon Valley Network.

Action Step 5.3.3: Encourage local governments to adopt alternative energy policies and amend their general plans and building codes to encourage the use of alternative energy in development projects.

Action Step 5.3.4: Educate the public and build consumer interest about purchasing and leasing options and financing programs through tax-exempt leases, other federal and state programs, utility owned, or other financial options.

Action Step 5.3.5: Provide assistance to local clean energy technology companies looking to expand their market outside the region.

Action Step 5.3.6: Support the implementation of state-adopted renewable energy portfolio standards and encourage PG&E to proactively work in concert with other entities to accelerate the incorporation and use of renewable energy and to increase the use of renewable energy in the region's energy mix beyond the minimum goals.

Action Step 5.3.7: Encourage public sector and major employers and to convert auto, truck, and bus fleets to electric or biofuels to save costs and meet environmental objectives.

Action Step 5.3.8: Develop an energy innovation center similar to San Diego Gas & Electric program where customers, local business, and trades people can learn about energy efficiency, alternative fuel transportation, clean energy alternatives, energy efficient design, rebates, and incentives.

"The Greater East Bay is blessed with an extensive network of resources that are ideal for competing globally – from world-renowned research and educational institutions to major logistics hubs and diverse demographics. Collaborating regionally to leverage these assets is a proven approach to building the right infrastructure for sustained innovation and economic development."

Ben Foster, VP, Operations, Optony Inc.

Clean Energy Cluster Implementation Plan

Goals/Objectives	Actions	Timeline	Resources	Responsibility
1.1: Expand clean energy R&D activity at regional universities, national laboratories, and corporate research facilities.	1.1.1: Foster innovation in the clean energy sector by supporting local research institutions that are competing for research grants.	Ongoing	Part-time staff to monitor, write letters, develop support, and advocate for increased clean energy R&D funding.	EDCs and new organization
	1.1.2: Identify and advocate for state and federal funding to expand innovation infrastructure from basic research to pilot plants, demonstration projects, and ful-lscale commercialization.			
	1.1.3: Support public-private R&D partnerships and clean energy sponsored research.	Ongoing	Industry, research institutes, and membership fees	EDCs and new organization
	1.1.4: Encourage local universities and national labs to focus on applied research that will accelerate large-scale deployment of clean energy technologies.	Ongoing	Membership fees	EDCs and new organization
	1.1.5: Advocate for increased DOE funding for translating basic research into practica technologies that will attract investors entrepreneurs who want to build companies, including joint public-private sector grants and loan guarantees for demonstration projects.	Ongoing	Membership fees	EDCs, research institutions, and industry
1.2: Develop and execute a strategy to accelerate the transfer of innovative clean energy technologies into the marketplace.	1.2.1: Facilitate university/research lab/industry collaboration to improve the technology transfer and commercialization process, working closely with entrepreneurs and the investment community.	**Priority #1** July–Dec 2011	Membership fees and research institutes	EDCs and new organization
	1.2.2: Support technology demonstration and scale-up projects.	Ongoing	Grants and industry	EDCs and new organization
	1.2.3: Facilitate university/research lab/industry interaction and cooperation by linking scientists and engineers with marketing and business development experts.	July–Dec 2011	Membership fees	EDCs and new organization
	1.2.4: Develop online database of cluster companies, suppliers, specialized vendors, contractors, and university and research lab tech transfer offices.	July–Dec 2011	Grants, private foundations, and membership fees	New organization
1.3: Capture innovation locally.	1.3.1: Assist local companies and entrepreneurs in acquiring locally developed technologies by connecting them with regional university and research lab tech transfer offices, with support from regional EDCs and SBDCs.	**Priority #1** Ongoing	EDA Grant	EDCs and new organization
	1.3.2: Proactively encourage companies using locally developed technology to locate in the Greater East Bay by working with university and research lab tech transfer offices in the early stages of a company's due diligence process.	Ongoing	EDA Grant	EDCs and new organization
	1.3.3: Connect entrepreneurs with investors, local financial incentives, and economic development programs.	Jan–Dec 2012	Sponsorships, membership fees, and event revenue	EDCs and new organization

"This strategic plan is an excellent guide that will enable the Greater East Bay region to play an important role in US Department of Energy Secretary Steven Chu's efforts to implement President Obama's important clean energy agenda. If all cities in the entire region will work together to promote clean energy businesses, we can make it happen!"

George Chao, Green Tech Power Group, a co-sponsor of the Green Tech Academy

Clean Energy Cluster Implementation Plan

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Goals/Objectives	Actions	Timeline	Resources	Responsibility
1.4: Support clean energy cluster growth and expansion.	1.4.1: Identify civic and industry leaders to promote the region and cluster development from basic research to pilot plants, demonstration projects, and fullscale commercialization.	Ongoing	Membership fees	EDCs, new organization, research institutes
	1.4.2: Promote the region's competitive advantages as a location for clean energy technology start-up, early stage, and established companies.	Ongoing	Membership fees	EDCs, new organization, local governments
	1.4.3: Identify gaps in the value chain and implement programs designed to attract start-up firms, private research organizations, suppliers, specialized vendors, and other complementary organizations.	Ongoing	Membership fees	EDCs, new organization, local governments
	1.4.4: Build and expand knowledge networks that bring together entrepreneurs, scientists, investors, business development, and industry leaders through monthly forums, quarterly events, and other cluster activities to spur innovation and productivity growth.	Ongoing	Membership fees	EDCs and new organization
	1.4.5: Establish a referral network of specialized service providers and investors that can assist with tech transfer, marketing, equity financing, regulatory approvals, and export assistance.	Ongoing	Membership fees	EDCs and new organization
1.5: Develop collaborative networks and promote best practices.	1.5.1: Investigate and adopt best practices to encourage the formation and expansion of a regional clean energy cluster by building on existing assets, expanding innovation infrastructure, developing collaborative networks, incubating start-up companies and technologies, and attracting suppliers, specialized service providers, scientists and engineering talent. Examples of clean energy centers include: Maryland Clean Energy Center, New England Clean Energy Council, Florida Clean Energy Cluster, Northern Colorado Clean Energy Custer, and Cleantech San Diego (see Goals and Objectives pages for web links).	Ongoing	Membership fees	EDCs and new organization

Clean Energy Cluster Implementation Plan

Goals/Objectives	Actions	Timeline	Resources	Responsibility
2.1: Educate and train a skilled workforce to meet industry needs.	2.1.1: Advocate for increased financial support for science and engineering programs at regional colleges.	2012	Membership fees	EDCs and new organization
	2.1.2: Engage companies in hiring and creating internships to support the pipeline training being done through local high schools, community colleges, WIB's, and universities.	Ongoing	Membership fees	EDCs and new organization
	2.1.3: Engage industry, labor, and academia to create tool libraries to assist students and/or new career employees.	2012	Industry and grants	WIBs, colleges, and new organization
2.2: Develop workforce training programs to meet industry needs.	2.2.1: Support the growth and development of local community college programs to prepare the incumbent workforce for emerging jobs and occupations in the clean energy sector (including solar, wind, biofuels, storage, smart grid, waste-to-energy, fuel cell, etc.).	2012	Grants and state and federal funding	Community colleges and WIBs
	2.2.2: Establish a clean energy jobs and training center in collaboration with the One-Stop Career Centers, WIBs, community colleges, and industry, e.g., the Cleantech Innovation Center at Oroville, CA (www.cicoroville.org).	2012	Grants, state and federal funding, private foundations, and industry	WIBs and community colleges
	2.2.3: Conduct survey of local clean energy employers regarding workforce hiring needs to identify the in-demand occupations and skills from R&D to sales that will be required to support the growth of local clean energy companies.	July–Dec 2011	Local WIBs	WIBs and new organization
2.3: Prepare future workforce pipeline.	2.3.1: Accelerate and support the adoption of rigorous science, technology, engineering, and math (STEM) curricula in the K-12 system, which connect to post-secondary education and training, and lead to high-demand, sustainable-wage jobs in the region's 21st century workforce.	Ongoing	Grants, state and federal funding, and existing school funding	Community colleges and 4-year colleges
	2.3.2: Establish a state polytechnic university in the region with degree and certificate programs designed around clean energy.	Long term	State and federal funding	CSUEB, EDCs and new organization
	2.3.3: Establish a clean energy program at CSUEB similar to clean energy certificate programs at Cal Poly Pomona, Humboldt State University's Schatz Energy Research Center, and OIT's bachelor's degree in renewable energy systems	2012 midterm	Grants, state and federal funding, private foundations, and industry	CSUEB
2.4: Attract high caliber talent to meet industry needs.	2.4.1: Create the linkages between education, industry, and research labs to anticipate new training needs and career opportunities.	July–Dec 2011	Membership fees	Higher education, industry, research labs, and new organization
	2.4.2: Encourage industry and research labs to provide work experience, internships, and training for students attending local degree and certificate programs in renewable energy.	2012	Membership fees, grants, and industry	EDCs, new organization, industry, and research labs

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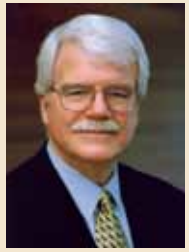

"Our economic future depends on the investments we make today in education, innovation, and infrastructure. The East Bay is home to some of the world's top research facilities, cutting-edge firms working to meet our energy and water challenges, and a strong network of education and training opportunities for our communities. Collaborating and building on these strengths will help bring new jobs, a cleaner environment, and a growing economy."

Congressman George Miller, senior Democrat on the House Education and Workforce Committee

Clean Energy Cluster Implementation Plan

Goals/Objectives	Actions	Timeline	Resources	Responsibility
3.1: Ensure region is a competitive location for clean energy companies.	3.1.1: Assist manufacturers in locating and expanding their production facilities in the region.	Ongoing	EDA and SBA grants and membership fees	EDCs and new organization
	3.1.2: Identify and address key facility and location requirements for each clean energy market segment in the region.	July–Dec 2011	EDA grants, membership fees, and sponsorships	EDCs and new organization
	3.1.3: Foster locations within the region for clean energy manufacturing.	Jan–Dec 2012	Local government staff	EDCs and new organization
	3.1.4: Promote a supportive public policy environment—including regulatory environment and market incentives—that is competitive with other regions targeting clean energy technology firms.	**Priority #1** Ongoing	Membership fees	EDCs and new organization
	3.1.5: Develop network of clean energy entrepreneurs, industry leaders, researchers, and investors.	**Priority #1** July–Dec 2011	Membership fees	EDCs and new organization
3.2: Identify tax credits and other financial incentives to attract and retain clean energy manufacturing.	3.2.1. Advocate for federal and state tax credits and other financial incentives to help electric vehicle and alternative fuel vehicle manufacturers expand their manufacturing capacity in the region.	Ongoing	Membership fees	EDCs and new organization
	3.2.2: Develop demonstration plant and pilot projects (e.g., San Jose's Green Vision Clean Energy Showcase).	2012 long term	EDA and DOE grants and private industry	EDCs and new organization
	3.2.3: Identify tax credits and financial incentives for clean energy manufacturing.	**Priority #1** July–Dec 2011	Membership fees	EDCs and new organization
	3.2.4: Amend project approval process to reduce time, cost, complexity, and uncertainty.	**Priority #1** 2011–2012	Membership fees	EDCs and new organization
3.3: Provide business development assistance to entrepreneurs and new enterprises.	3.3.1: Provide incubation and business acceleration services for start-up and early-stage clean energy companies.	2012	EDA and SBA grants, local government, sponsorships, private foundations, and client fees	New organization, incubator, and SBDCs
	3.3.2: Hold venture forums and business plan competitions to expose equity investors and venture capital firms to local start-up and early-stage clean energy companies.	Ongoing	Sponsorships and attendees	EDCs and new organization
	3.3.3: Provide entrepreneurship training through local SBDC centers, community colleges, and 4-year colleges.	Ongoing	Grants, student fees, state funding, private foundations, and industry	SBDCs, community colleges, and 4-year colleges
3.4: Build alternative energy infrastructure.	3.4.1: Encourage public sector to install electric vehicle charging stations and biofuels filling stations in corporate yards, public parking garages, and new development projects.	Ongoing	Membership fees	EDCs and new organization
	3.4.2: Develop a uniform, efficient, low-cost permitting process for clean energy projects and installations.	2012	Membership fees	EDCs and new organization

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Establish the Greater East Bay as a global center for clean energy technology companies.

"In Solano County, we took a piece of land with limited development potential and converted it into a producer of cost-effective green power for a critical county facility. That's doing the right thing in a smart business way."

Solano County Supervisor John Vasquez, District 4, concerning the solar array on Claybank Road, which serves double-duty as a shade structure for Fairfield-Suisun Unified School district buses that use the old missile magazine site as a parking lot

Clean Energy Cluster Implementation Plan

Goals/Objectives	Actions	Timeline	Resources	Responsibility
4.1: Ensure adequate capital for clean energy projects	4.1.1: Identify and provide access to investment capital to support business enterprises at every stage of development.	**Priority #1** July–Dec 2011	Membership fees	EDCs and new organization
	4.1.2: Identify and develop relationships with venture capital firms investing in clean energy.	July–Dec 2011	Membership fees	EDCs and new organization
	4.1.3: Hold venture forums to create awareness among investment community and to link local entrepreneurs with potential investors.	**Priority #1** Ongoing	Sponsorships and attendees	EDCs and new organization
4.2: Attract federal and state funding for early-stage companies.	4.2.1: Explore and pursue federal regional innovation cluster grant opportunities (including DOE, EDA, SBA, DOL).	**Priority #1** July–Dec 2011	Membership fees	EDCs and new organization
	4.2.2: Investigate state, local, and private grant and other funding options (EPS, Energy Cluster Program, BAAQMD, CARB, WDB, etc).	July–Dec 2011	Membership fees	EDCs and new organization
	4.2.3: Retain a knowledgeable firm or individual to assist with identifying and securing grant opportunities.	July–Dec 2011	Membership fees	EDCs and new organization
	4.2.4: Advocate for SBIR and NSF funding for start-up and early-stage companies to translate their innovative ideas into commercially viable products and assist them in applying for SBIR grants.	Ongoing	Membership fees	EDCs and new organization
	4.2.5: Assist entrepreneurs in applying for federal SSTR grants.	Ongoing	Grants, client fees, private foundations and SBDC staff	SBDCs
4.3: Identify and establish relationships with banks that are knowledgeable about the clean energy sector.	4.3.1: Identify and meet with regional banks regarding the needs of the clean energy sector.	Ongoing	Membership fees	EDCs and new organization
	4.3.2: Encourage banks to develop loan programs for business expansion and equipment to meet the growth needs of clean energy companies.	Ongoing	Membership fees	EDCs and new organization
4.4: Foster an entrepreneurial culture and support entrepreneurship training programs.	4.4.1: Establish a cleantech business incubator focused on using locally developed technologies, clean energy start-ups, and early-stage companies.	2012	Grants, fees, sponsorships, local government, private foundations and industry	EDCs and new organization
	4.4.2: Provide entrepreneurship training through local SBDCs, community colleges, and 4-year colleges.	Ongoing	Grants	SBDCs, WIBs, community colleges, and 4-year colleges
	4.4.3: Hold forums for workforce agencies and industry to interact.	Ongoing	Sponsorships and attendees	EDCs and new organization
	4.4.4: Connect entrepreneurs to local resources, specialized service providers, investment capital, and marketing opportunities.	Ongoing	Membership fees	SBDCs, EDCs and new organization

Clean Energy Cluster Implementation Plan

Goals/Objectives	Actions	Timeline	Resources	Responsibility
5.1: Identify early adopters and projects.	5.1.1: Survey public sector (counties, cities, public school districts, community college districts, colleges, water, and wastewater agencies, transit districts) regarding future plans for alternative energy projects and potential interest in an aggregated purchasing program.	**Priority #1** July–Dec 2011	WIB grant and industry	CCEP
	5.1.2: Survey public housing authorities, non-profit housing developers, and redevelopment agencies regarding future plans or interest in alternative energy projects.	July–Dec 2011	WIB grant and industry	CCEP
	5.1.3: Survey commercial real estate developers, building owners, and property managers regarding future plans or interest in energy efficiency and alternative energy projects.	**Priority #1** July–Dec 2011	WIB grant, industry, and sponsorships	CCEP
	5.1.4: Identify specific procurement programs, resources, financing programs, rebates, and incentives.	July–Dec 2011	Membership fees	EDCs and new organization
5.2: Create a favorable financial environment for investment in and the purchase/installation of clean energy technologies.	5.2.1: Support state and federal tax incentives for investment in or the purchase/installation of clean energy technologies.	Ongoing	Membership fees	EDCs and new organization
	5.2.2: Work with industry and government leaders to develop financial incentives and financing programs for businesses and consumers to purchase clean energy technologies.	Ongoing	Membership fees	EDCs and new organization

Clean Energy Cluster Implementation Plan

Goals/Objectives	Actions	Timeline	Resources	Responsibility
5.3: Promote a supportive public policy environment that expands market demand.	5.3.1: Encourage public sector to adopt "buy local" policies. "Buy local" policies should include life cycle cost analysis and environmentally preferred purchasing requirements.	**Priority #1** July–Dec 2011	Membership fees	EDCs
	5.3.2: Establish an aggregated clean energy purchasing program similar to the model developed by Joint Venture Silicon Valley Network.	**Priority #1** July–Dec 2011	Membership fees	EDCs
	5.3.3: Encourage local governments to adopt alternative energy policies and amend their general plans to encourage the use of alternative energy in development projects.	2012	Membership fees	EDCs and local governments
	5.3.4: Educate the public and build consumer interest about purchasing and leasing options and financing programs through tax-exempt leases, other federal and state programs, utility owned, or other financial options.	2012	Membership fees	EDCs
	5.3.5: Provide assistance to local clean energy technology companies looking to expand their market outside the region.	Ongoing	SBDCs and federal funding	EDCs and SBDCs
	5.3.6: Support the implementation of state-adopted renewable energy portfolio standards and encourage PG&E to proactively work in concert with other entities to accelerate the incorporation and use of renewable energy and to increase the use of renewable energy in the region's energy mix beyond the minimum goals.	July–Dec 2011	Membership fees	EDCs, PG&E, and industry
	5.3.7: Encourage public sector and large employers and businesses to convert auto, truck, and bus fleets to electric or biofuels to save costs and meet environmental objectives.	July–Dec 2011	Membership fees	EDCs
	5.3.8: Develop an energy innovation center similar to San Diego Gas & Electric where customers, local business, and trades people can learn about energy efficiency, alternative fuel transportation, clean energy alternatives, energy efficient design, rebates, and incentives	As needed 2012–2014	Grants, industry, and private foundations	EDCs and new organization

Clean Energy Companies

Company	Location	Market Segment/Technology
Acro Energy Technologies	Concord	Solar
ABB Inc.	Walnut Creek	Monitoring and control systems
Amyris, Inc.	Emeryville	Biofuels
Aurora Algae	Hayward	Biofuels
Bay Biodiesel, LLC	Martinez	Biofuels
Blue Sky Bio-fuels (subsidiary of Sirona Fuels)	Oakland	Biofuels
Borrego Solar	Berkeley	Solar
BrightSource Energy	Oakland	Solar
Brobeck Solar Energy LLC	Moraga	Solar
California Switchgear & Solar, Inc.	Fairfield	Grid-tied solar design and installation
Canadian Solar Inc.	San Ramon	Vertically-integrated manufacturer of silicon, ingots, wafers, cells, solar modules (panels), and custom-designed solar power
Chevron Technology Ventures	San Ramon	Biofuels
Cool Earth Solar	Livermore	Solar
CytoCulture International, Inc.	Point Richmond	Biofuels
Deeya Energy	Fremont	Advanced batteries
EcoNexus	Antioch	Energy management
enXco, Inc. (an EDF EN company)	San Ramon	Renewable energy development and operations
ET Solar Group	Pleasanton	Solar
Exsolarent Energy Group Inc.	Fairfield	Solar
First Source Solar Systems	Vacaville	Solar
Fulcrum BioEnergy	Pleasanton	Biofuels
Green Tech Power Group	Vallejo	Clean energy development and operations
GreenVolts, Inc.	Fremont	Concentrating photovoltaics (CVP) technology
GWF Energy LLC	Pittsburg	Waste-to-energy

Clean Energy Companies

Company	Location	Market Segment/Technology
Halus Power Systems	San Leandro	Wind
HelioDynamics, Inc.	Orinda	Solar
Heliodyne, Inc.	Richmond	Solar thermal
Los Medanos Energy Center (owned and operated by Calpine)	Pittsburg	Cogeneration
Mendel Biotechnology, Inc.	Hayward	Biofuels
Oorja Protonics	Fremont	Fuel cell
Optimal Technologies (USA), Inc.	Benicia	Energy management software
OptiSolar	Hayward	Solar PV
Orion Energy, LLC (subsidiary of BP Alternative Energy)	Oakland	Wind
Pacific SolarTech	Fremont	Solar
PolyPlus Battery Company	Berkeley	Lithium batteries
RedOx Biofuels (subsidiary of AIC)	Alameda	Biofuels
Seeo	Berkeley	Lithium batteries
Sequesco	Berkeley	Biofuels
Simbol Materials	Pleasanton	Lithium, manganese, and zinc batteries
Sky Power Solar	San Ramon	Solar
SPG Solar (Solar Insights)	Rio Vista	Solar developer
Solar Millennium, LLC	Berkeley	Residential solar installation
Solar University, Inc.	Livermore	Solar installation
Solaria Corporation	Fremont	Solar
Solyndra, Inc.	Fremont	Solar
Sun Light and Power	Berkeley	Solar
Sungevity	Oakland	Solar
SunPower	Richmond	Solar

Clean Energy Companies

Company	Location	Market Segment/Technology
SunWater Solar Inc.	Richmond	Solar thermal
Sustainable Technologies	Alameda	Solar
UltraCell Corporation	Livermore	Fuel cell
Wadham Energy, Limited Partnership (subsidiary of Enpower Corp.)	San Ramon	Biomass
Water & Energy Management Co.	Danville	Cogeneration
Xtreme Energetics Inc.	Livermore	Photovoltaic solar

The companies identified above include only core businesses in the clean energy cluster. Specialized vendors, suppliers, and service providers that make up the complete value chain are not listed.

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Water Technology Cluster

Photo on reverse: West County Wastewater District General Manager E.J. Shalaby shows the district's solar installation in Richmond to Gary Craft and Kevin Stichtler of Craft Consulting Group

Water Technology Goals, Objectives, and Actions

Goal #1: Become a leading global center for water technology innovation and incubation.

Objective 1.1: Expand water technology research and development (R&D) at regional universities/ colleges, national laboratories, research institutes, and corporate research facilities.

Action Step 1.1.1: Foster innovation in the water technology sector by supporting local research institutions that are competing for research grants.

Action Step 1.1.2: Advocate for increased funding to expand innovation infrastructure in the water technology sector from basic research to full-scale commercialization.

Action Step 1.1.3: Encourage research in decentralized water technologies, including real-time monitoring, water quality, recycling, and conservation at the point of use; and on-site wastewater reclamation and reuse.

Action Step 1.1.4: Promote applied research in water reuse, conservation, water quality and treatment, water purification, and desalination technologies.

Action Step 1.1.5: Support the development of innovative water technology research, water resource management policy, and demonstration projects.

Objective 1.2: Expand access to commercially viable research and accelerate technology transfer and commercialization.

Action Step 1.2.1: Encourage research institutions to increase awareness of available technologies and to improve their technology transfer and intellectual property licensing process through online management systems.

Action Step 1.2.2: Facilitate university/research lab/industry interaction by linking researchers, engineers, and industry.

Action Step 1.2.3: Disseminate locally developed technologies available for licensing among local firms, entrepreneurs and economic development agencies.

Action Step 1.2.4: Encourage the development of web-based systems for technology transfer and knowledge-sharing by research institutions.

Objective 1.3: Capture research locally.

Action Step 1.3.1: Support and promote entrepreneurial activity in the water technology sector through incubation, business support services, marketing, and export assistance.

Action Step 1.3.2: Work with university and research lab technology transfer offices to encourage companies using locally developed technology to locate in the Greater East Bay.

Action Step 1.3.3: Assist local companies and entrepreneurs in acquiring locally developed technologies by connecting them with regional university and research lab tech transfer offices, with support from regional economic development organizations and Small Business Development Centers.

Water Technology Cluster

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Research and innovation

Water samples from EBMUD's service area are brought to the EBMUD lab to be processed for analysis (photo courtesy EBMUD).

"... the single common factor that drives ... innovation across all sectors is the availability of a well-qualified and specialized talent pool. While a hub's initial success can often be fueled by relying primarily on local talent, the importance of attracting, developing, and retaining a vibrant base of world-class talent increases as clusters mature and grow in complexity."

McKinsey & Company
Building an Innovation Nation

Water Technology Goals, Objectives, and Actions

Objective 1.4: Support cluster growth and expansion.

Action Step 1.4.1: Identify civic and industry leaders to promote the region and cluster development.

Action Step 1.4.2: Promote the region's competitive advantages as a location for new start-up, early stage, and established companies focused on water technology.

Action Step 1.4.3: Build knowledge networks that bring together educators, researchers, entrepreneurs, industry leaders, and investors through monthly forums, quarterly events, and other cluster activities to spur innovation and productivity growth.

Action Step 1.4.4: Identify gaps in the value chain and implement programs designed to attract key companies to the region.

Action Step 1.4.5: Establish a referral network of specialized service providers that can assist with tech transfer, equity financing, and export assistance.

Objective 1.5: Develop collaborative networks and adopt best practices.

Action Step 1.5.1: Expand cluster relationships and networks to increase synergy with water technology companies, investment capital, and research in Silicon Valley and Davis.

Action Step 1.5.2: Work with local research institutes such as the National Institutes for Water Research at UC Berkeley (http://ucanr.org/sites/wrc) and the Water and Energy Technology Team (WETT) at Lawrence Berkeley National Laboratory (LBNL) (http://water-energy.lbl.gov/node/5), California Water Resource Research Institute at UCANR, Industrial Partnerships Office at LLNL (https://ipo.llnl.gov), and the John Muir Institute of the Environment at UC Davis (http://johnmuir.ucdavis.edu/water-and-watersheds) to expand innovation capacity and accelerate technology transfer.

Action Step 1.5.5: Investigate and adopt best practices. Examples of leading cluster practices include:

Regina Sustainable Infrastructure Cluster: www.nrc-cnrc.gc.ca/eng/clusters/factsheets/regina.html

Water and Environmental Technology Cluster: www.cevtech.cz/project_en.php?odk=uvod

Water Technology Cluster: http://watertechnologycluster.com.au

Fresno Water Technology Cluster: www.fresnorji.org/industry/?cluster=ICWT

California Water Institute: www.californiawater.org/organizations.html

Water Industry Alliance: www.waterindustry.com.au/whatis/index.php

Milwaukee Water Industry Cluster: www.milwaukee7-watercouncil.com/wiki/show/Main

Colorado Water Innovation Cluster: www.fcgov.com/business/archive/201009-newsletter.php?cmd=3

Water Technology Innovation Cluster: www.epa.gov/wtic/index.html

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"The East Bay Municipal Utility District (EBMUD) has long had a strong commitment to developing new energy sources and protecting our environment. The enlightened strategic vision, and the collaborative work of the Regional Innovation Cluster, will transform and expand our economic base; it will also support and accelerate EBMUD's own groundbreaking work in energy efficiency and recycled water systems."

John A. Coleman, Board President, EBMUD

Water Technology Goals, Objectives, and Actions

Goal #2: Develop a skilled and highly qualified workforce to meet the needs of a clean technology economy.

Objective 2.1: Educate and train a skilled workforce to meet industry needs.

Action Step 2.1.1: Support and expand the Bay Area Consortium of Water & Wastewater Education (BACWWE) sponsored water/wastewater technology program at Solano Community College.

Action Step 2.1.2: Encourage water and wastewater agencies to provide work experience, internships, and training for students attending local certification programs.

Action Step 2.1.3: Advocate for increased financial support for science and engineering programs at regional colleges.

Action Step 2.1.4: Build the knowledge base and skilled workforce necessary to address the water technology sector needs.

Action Step 2.1.5: Identify and develop training and education programs needed for expanding water technology innovation and production.

Action Step 2.1.6: Support the growth and development of local community college programs to prepare the incumbent workforce for emerging and replacement jobs and occupations in the water technology and resource management sector.

Action Step 2.1.7: Support the development of training programs in green infrastructure technologies (see *EPA Catalog of Training Opportunities for Green Infrastructure Technologies, September 2010*).

Objective 2.2: Prepare future workforce pipeline.

Action Step 2.2.1: Support and accelerate the science, technology, engineering, and mathematics (STEM) curriculum throughout the education spectrum from K-12 through higher education.

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Talent and workforce development

"As a regional steward of the East Bay's economic and social health, Cal State East Bay has identified the critical need to improve science, technology, engineering, and mathematics (STEM) education across the curriculum. In order for our region's students to be competitive in the global workforce, we are pursuing a three-part strategy: teaching science, technology, engineering, and mathematics across the curriculum; developing STEM teachers; and creating a 'cradle-to-career' STEM pipeline. By partnering with regional employers like Bayer, which is funding our new Center for STEM Education, we are working together to build the next-generation workforce, enhance our regional economy, and create thriving communities."

Mohammad H. Qayoumi, President, California State University, East Bay

Water Technology Goals, Objectives, and Actions

Goal #3: Develop and expand R&D, manufacturing, and operations capabilities in the region.

Objective 3.1: Ensure region is a competitive location for water technology companies.

Action Step 3.1.1: Assist manufacturers to locate and expand their production facilities in the region.

Action Step 3.1.2: Expand the value chain to include water and wastewater utilities, engineering firms, manufacturers' reps, specialized suppliers and vendors, and companies in related sectors such as information technology (IT), geographic information systems (GIS), and decision matrices.

Action Step 3.1.3: Develop a supportive public policy environment—including R&D investments, regulatory environment, entrepreneurial support, and market incentives—that is competitive with those of the regions that are targeting water technologies.

Action Step 3.1.4: Identify and attract national and international water conferences, such as the Water Innovations Alliance (www.waterinnovations.org), to be held in the East Bay.

Action Step 3.1.5: Encourage regional water and wastewater agencies to implement demonstration and pilot projects using locally developed technologies.

Action Step 3.1.6: Identify and support new technologies, practices, and policies that promote water and energy sustainability, resource recovery, and the water-energy nexus in wastewater treatment, water treatment and reclamation, and water distribution.

Objective 3.2: Become a global leader in sustainable water technology.

Action Step 3.2.1: Support and promote the installation of sustainable water infrastructure consistent with U.S. EPA best practices to address challenges presented by water scarcity, climate change, increasing population, energy, and aging infrastructure.

Action Step 3.2.2: Promote water and energy audits of water/wastewater agency facilities to identify and prioritize projects that will facilitate water and energy innovation at water and wastewater agencies.

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Manufacturing and infrastructure

"I believe strongly in the need to plan. To do that, we need to know what opportunities exist so we can take advantage of them. The assets in this region are tremendous, and it is very important that we identify and promote them. We are witnessing history with this Regional Innovation Cluster clean energy and water technology initiative. I'm very excited to be part of it."

Gary W. Darling, General Manager, Delta Diablo Sanitation District, and Chair, Water Technology Cluster

Water Technology Goals, Objectives, and Actions

Goal #4: Expand investment and grant funding in water technologies.

Objective 4.1: Ensure adequate capital for water technology projects.

Action Step 4.1.1: Identify and provide access to investment capital to support business enterprises at every stage of development.

Action Step 4.1.2: Identify and develop relationships with venture capital firms investing in water technologies.

Action Step 4.1.3: Create connections between emerging water technology companies and large companies (such as Siemens, Dow, GE, and Veolia).

Objective 4.2: Attract federal and state grant funding for early stage companies.

Action Step 4.2.1: Explore and pursue federal Regional Innovation Cluster grant opportunities (e.g., DOE, EDA, SBA, DOL).

Action Step 4.2.2: Advocate for and pursue Small Business Innovation Research (SBIR) and National Science Foundation funding for start-up and early-stage companies to translate their innovative ideas into commercial products.

Action Step 4.2.3: Assist entrepreneurs in applying for federal Small Business Technology Transfer (SSTR) grants.

Objective 4.3: Foster an entrepreneurial culture and support entrepreneurship training programs.

Action Step 4.3.1: Establish a cleantech business incubator.

Action Step 4.3.2: Provide entrepreneurship training through local Small Business Development Centers (SBDCs), community colleges, and four-year colleges.

Action Step 4.3.3: Hold venture forums and business plan competitions to expose equity investors and venture capital firms to local start-up and early-stage water technology companies.

Action Step 4.3.4: Conduct technology transfer licensing workshops for cluster companies.

Objective 4.4: Provide capital and business development assistance to entrepreneurs and new enterprises.

Action Step 4.4.1: Provide incubation and business acceleration services.

Action Step 4.4.2: Connect entrepreneurs to local resources, specialized service providers, investment capital, and marketing opportunities.

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Entrepreneurship and investment

East Bay Municipal Utility District's Main Wastewater Treatment Plant, located at the base of the Bay Bridge in Oakland (photo courtesy EBMUD).

"Entrepreneurs innovate. Innovation is the specific instrument of entrepreneurship. It is the act that endows resources with a new capacity to create wealth."

Peter F. Drucker, writer and social ecologist

Water Technology Goals, Objectives, and Actions

Goal #5: Expand market opportunities for innovative water technologies.

Objective 5.1: Identify early adopters and expand regional market demand.

Action Step 5.1.1 Encourage regional water and wastewater agencies to serve as a platform for the testing and demonstration of innovative water technologies and to support "buy local" programs.

Action Step 5.1.2: Educate public about water efficient technologies, conservation, and reuse.

Action Step 5.1.3: Encourage commercial real estate owners and managers to adopt decentralized water infrastructure technologies that increase efficient water use and the recycling of potable water on-site.

Action Step 5.1.4: Promote adoption of innovative water technologies through venture forums and trade shows (see videos on innovative water technologies: www.youtube.com/watch?v=pU6JKptBq7Y&feature=player_embedded and http://www.youtube.com/watch?v=B1oukPT2Mus&feature=related).

Action Step 5.1.5: Support regional water agencies in the implementation of SB x7-7, which was enacted in November 2009, requiring all water suppliers to increase water use efficiency with an overall statewide goal of reducing per capita urban water use by 20% by 2020.

Action Step 5.1.6: Link cluster companies with regional and external market opportunities.

Action Step 5.1.7: Promote the adoption of green infrastructure as an approach to stormwater management, capture, and reuse that includes rain gardens, porous pavements, green roofs, infiltration planters, trees and tree boxes, and rainwater harvesting for non-potable uses such as toilet flushing and landscape irrigation.

Objective 5.2: Help consumers finance water efficient improvements and renewable energy installations on their properties through tax credits and incentives, financing programs, etc.

Action Step 5.2.1: Support state and federal tax incentives for investment in or purchase/installation of innovative water technologies.

Action Step 5.2.2: Develop financial incentives for water users to conserve, reuse, and recycle water.

Objective 5.3: Encourage local governments to adopt water efficiency and reuse policies.

Action Step 5.3.1: Encourage local governments to adopt water elements to their general plans.

Action Step 5.3.2: Support general plan changes and implementation of the California Green Building Standards Code to encourage the use of recycled water in development projects.

Action Step 5.3.3: Encourage the development and use of water efficient technologies, recycled water, rainwater harvesting, and grey water systems in major real estate development projects such as the Concord Naval Weapons Station.

Action Step 5.3.4: Advocate for an innovative water and wastewater treatment technology grant program in California similar to Pennsylvania's, which provides grants to public entities (local governments, public schools, and state colleges) to install or implement new or innovative technologies in their operation (www.portal. state.pa.us/portal/server.pt/community/innovative_water_technology/10562/growing_greener/554022).

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Market transformation and expansion

Olgica Bakajin and her Lawrence Livermore National Laboratory colleagues have created carbon nanotubes that could be used for desalination (photo by Jacqueline McBride/LLNL).

"When the well is dry, we know the worth of water."

Benjamin Franklin, Poor Richard's Almanac, 1746

Water Technology Cluster Implementation Plan

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Goals/Objectives	Actions	Timeline	Resources	Responsibility
1.1: Expand water technology research and development (R&D) at regional universities, national laboratories, research institutes, and corporate research facilities	1.1.1: Foster innovation in the water technology sector by supporting local research institutions that are competing for research grants.	Ongoing	Federal and state grants	EDCs
	1.1.2: Advocate for increased funding to expand innovation infrastructure in the water technology sector from basic research to full-scale commercialization.	**Priority #1** Ongoing	Membership fees	Private industry
	1.1.3: Encourage research in decentralized water technologies including real-time monitoring, water quality, recycling, and conservation at the point of use; and on-site wastewater reclamation and reuse.	Ongoing	Membership fees	EDCs and new organization
	1.1.4: Promote applied research in water reuse, conservation, water quality and treatment, water purification, and desalination technologies.	Ongoing	Membership fees	EDCs and new organization
	1.1.5: Support the development of innovative water technology research, water resource management policy, and demonstration projects.	Ongoing	Membership fees	EDCs and new organization
1.2: Expand access to commercially viable research and accelerate technology transfer and commercialization.	1.2.1: Encourage research institutions to increase awareness of available technologies and to improve their technology transfer and intellectual property licensing process through online management systems.	Ongoing	Membership fees	EDCs and new organization
	1.2.2: Facilitate university/research lab/industry interaction by linking researchers, engineers, and industry.	Ongoing	Membership fees	EDCs and new organization
	1.2.3: Disseminate locally developed technologies available for licensing among local firms, entrepreneurs, and economic development agencies.	Ongoing	Membership fees	Research institutions
	1.2.4: Encourage the development of web-based systems for technology transfer and knowledge-sharing by research institutions.	2012	Grants, research institutes, and industry	EDCs and research institutions
1.3: Capture research locally.	1.3.1: Support and promote entrepreneurial activity in the water technology sector through incubation, business support services, marketing, and export support.	Ongoing	Grants and SBDC	EDCs and new organization
	1.3.2: Work with university and research lab tech transfer offices to encourage companies using locally developed technology to locate in the Greater East Bay.	Ongoing	Membership fees	EDCs, new organization, and research institutions
	1.3.3 Assist local companies and entrepreneurs in acquiring locally developed technologies by connecting them with regional university and research lab tech transfer offices, with support from regional economic development organizations and Small Business Development Centers.	**Priority #1** July–Dec 2011	Membership fees	EDCs

Water Technology Cluster Implementation Plan

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Goals/Objectives	Actions	Timeline	Resources	Responsibility
1.4: Support cluster development and growth.	1.4.1: Identify civic and industry leaders to promote the region and cluster development.	**Priority #1** Mar–Dec 2011	Membership fees	EDCs and new organization
	1.4.2: Promote the region's competitive advantages as a location for new start-up, early stage, and established companies focused on water technology.	Ongoing	Membership fees	EDCs and new organization
	1.4.3: Build knowledge networks that bring together educators, researchers, entrepreneurs, industry leaders, and investors through monthly forums, quarterly events, and other cluster activities to spur innovation and productivity growth.	Ongoing	Membership fees	EDCs and new organization
	1.4.4: Identify gaps in the value chain and implement programs designed to attract key companies.	Ongoing	Sponsorships and attendees	EDCs and new organization
	1.4.5: Establish a referral network of specialized service providers that can assist with tech transfer, equity finance, and export assistance.	Ongoing	Membership fees	EDCs and new organization
1.5: Develop collaborative networks and adopt best practices.	1.5.1: Expand cluster relationships and networks to increase synergy with water technology companies, investment capital, and research in Silicon Valley and Davis.	**Priority #1** July–Dec 2011	Membership fees	EDCs and new organization
	1.5.2: Work with local research institutes such as the National Institutes for Water Research at UC Berkeley and the Water and Energy Technology Team (WETT) at Lawrence Berkeley National Laboratory and the California Water Resource Research Institute at UCANR, Industrial Partnerships Office at LLNL, and the John Muir Institute of the Environment at UC Davis to expand innovation capacity and accelerate technology transfer.	**Priority #1** Ongoing	Membership fees	EDCs and new organization
	1.5.3: Investigate and adopt best practices. Examples of leading cluster practices include: Regina Sustainable Infrastructure Cluster, Water and Environmental Technology Cluster, Water Technology Cluster, Fresno Water Technology Cluster, California Water Institute, Water Industry Alliance, Milwaukee Water Industry Cluster, Colorado Water Innovation Cluster, and Water Technology Innovation Cluster. (See Goals and Objectives pages for web links.)	**Priority #1** Ongoing	Membership fees	EDCs and new organization

Water Technology Cluster Implementation Plan

Goals/Objectives	Actions	Timeline	Resources	Responsibility
2.1: Educate and train a skilled workforce to meet industry needs.	2.1.1: Support and expand the BACWWE sponsored water/ wastewater technology program at Solano Community College.	**Priority #1** Ongoing	Membership fees	EDCs, new organization, community colleges, and Industry
	2.1.2: Encourage water and wastewater agencies to provide work experience, internships, and training for students attending local certification programs.	Ongoing	Membership fees	Industry, EDCs, and new organization
	2.1.3: Advocate for increased financial support for science and engineering programs at regional colleges.	Ongoing	Membership fees	EDCs and new organization
	2.1.4: Identify and develop training and education needed for expanding water technology innovation and production.	**Priority #1** 2012	Grants and membership fees	WIBs and community colleges
	2.1.5: Support the growth and development of local community college programs to prepare the incumbent workforce for emerging and replacement jobs and occupations in the water technology and resource management sector.	**Priority #1** Ongoing	WIB grants and industry	EDCs, new organization, community colleges, and industry
	2.1.6: Support the development of training programs in green infrastructure technologies (see EPA Catalog of Training Opportunities for Green Infrastructure Technologies, September 2010).	**Priority #1** Ongoing	Membership fees	EDCs and new organization
2.2: Prepare future workforce pipeline.	2.2.1: Support and accelerate STEM curriculum throughout the education spectrum from K-12 through higher education.	**Priority #1** Ongoing	Public schools, and state and local funding	EDCs and new organization

Water Technology Cluster Implementation Plan

Goals/Objectives	Actions	Timeline	Resources	Responsibility
3.1: Ensure region is a competitive location for water technology companies.	3.1.1: Assist manufacturers in locating and expanding their production facilities in the region.	Ongoing	Membership fees	EDCs and new organization
	3.1.2: Expand the value chain to include water and wastewater utilities, engineering firms, manufacturers' reps, specialized suppliers and vendors, and companies in related sectors such as IT, GIS, and decision matrices.	Ongoing	Membership fees	EDCs and new organization
	3.1.3: Develop supportive public policy environment – including R&D investments, regulatory environment, entrepreneurial support, and market incentives – that is competitive with those of the regions that are targeting water technologies.	**Priority #1** Ongoing	Membership fees	EDCs, new organization, and local government
	3.1.4: Identify and attract national and international water conferences.	**Priority #1** Ongoing	Sponsorships and attendees	EDCs and new organization
	3.1.5: Encourage regional water and wastewater agencies to implement demonstration and pilot projects using locally developed technologies.	Ongoing	Grants and state and federal funding	EDCs, new organization, and water and wastewater agencies
	3.1.6: Identify and support new technologies, practices, and policies that promote water and energy sustainability, resource recovery, and the water-energy nexus in wastewater treatment, water treatment and reclamation, and water distribution.	Ongoing	Membership fees	EDCs, new organization, and water and wastewater agencies
3.2: Become a global leader in sustainable water technology.	3.2.1: Support and promote the installation of sustainable water infrastructure consistent with U.S. EPA best practices to address challenges presented by water scarcity, climate change, increasing population, energy, and aging infrastructure.	Ongoing	Membership fees	EDCs, new organization, and water and wastewater agencies
	3.2.2: Promote water and energy audits of water/ wastewater agency facilities to identify and prioritize projects that will facilitate water and energy innovation at water and wastewater agencies.	Ongoing	Seek opportunities for water credits	Water and wastewater agencies and electric utilities

Water Technology Cluster Implementation Plan

Goals/Objectives	Actions	Timeline	Resources	Responsibility
4.1: Ensure region is a competitive location for water technology companies.	4.1.1: Identify and provide access to investment capital to support business enterprises at every stage of development.	2012	Membership fees	EDCs and new organization
	4.1.2: Identify and develop relationships with venture capital firms investing in water technologies.	Ongoing	Membership fees	New organization and SBDCs
	4.1.3: Create connections between emerging water technology companies and large companies (such as Siemens, Dow, GE, Veolia).	Ongoing	Membership fees	EDCs and new organization
4.2: Attract federal and state grant funding for early stage companies.	4.2.1: Explore federal Regional Innovation Cluster grant opportunities (e.g., DOE, EDA, SBA, DOL)	**Priority #1** Ongoing	Membership fees	EDCs and new organization
	4.2.2: Advocate for and pursue EPA's SBIR and NSF funding for start-up and early-stage companies to translate their innovative ideas into commercial products.	Ongoing	Membership fees	EDCs and new organization
	4.2.3: Assist entrepreneurs in applying for federal Small Business Technology Transfer grants.	Ongoing	Grants	SBDCs
4.3: Foster an entrepreneurial culture and support entrepreneurship training programs.	4.3.1: Establish a cleantech business incubator.	2012–2013	Grants and state and federal funding	EDCs, new organization, and SBDCs
	4.3.2: Provide entrepreneurship training through local SBDCs, community colleges, and 4-year colleges.	2012–2013	SBDCs	SBDCs, community colleges, and 4-year colleges
	4.3.3: Hold venture forums and business plan competitions to expose equity investors and venture capital firms to local start-up and early-stage water technology companies.	Ongoing	Sponsorships	SBDCs, EBIG, universities, and research labs
	4.3.4: Conduct technology transfer licensing workshops for cluster companies.	Ongoing	Grants and sponsorships	SBDCs and research labs
4.4: Provide capital and business development assistance to entrepreneurs and new enterprises.	4.4.1:Provide incubation and business acceleration services	2012–2013	Grants, client fees, private foundations, industry, and sponsorships	SBDCs
	4.4.2: Connect entrepreneurs to local resources, specialized service providers, investment capital, and marketing opportunities.	Ongoing	Grants, SBDC staff, client fees, and membership fees	SBDCs

Water Technology Cluster Implementation Plan

Goals/Objectives	Actions	Timeline	Resources	Responsibility
5.1: Identify early adopters and build consumer interest in water conservation and reuse.	5.1.1: Encourage regional water and wastewater agencies to serve as a platform for the testing and demonstration of new and innovative water technologies and to support "buy local" programs.	Ongoing	Membership fees	EDCs, new organization, and water and wastewater agencies
	5.1.2: Educate public about water efficient technologies, conservation, and reuse.	Ongoing	Membership fees	New organization and water and wastewater agencies
	5.1.3: Encourage commercial real estate owners and managers to adopt decentralized water infrastructure technologies that increase efficient water use and the recycling of potable water on-site.	Ongoing	Membership fees	EDCs and new organization
	5.1.4: Promote adoption of innovative water technologies through venture forums and trade shows.	Ongoing	Membership fees	EDCs, new organization, and industry
	5.1.5: Support regional water agencies in the implementation of SB x7-7, which was enacted in November 2009, requiring all water suppliers to increase water use efficiency with an overall statewide goal of reducing per capita urban water use by 20% by 2020.	**Priority #1** Ongoing	Membership fees	EDCs, new organization, and water and wastewater agencies
	5.1.6: Link cluster companies with regional and external market opportunities.	Ongoing	Membership fees	EDCs, new organization, and SBDCs
	5.1.7: Promote the adoption of green infrastructure as an approach to stormwater management, capture, and reuse that includes rain gardens, porous pavements, green roofs, infiltration planters, trees and tree boxes, and rainwater harvesting for nonpotable uses such as toilet flushing and landscape irrigation.	2012	Membership fees	EDCs, new organization, and water and wastewater agencies
5.2: Help consumers finance water efficient improvements and renewable energy installations on their properties through tax credits and incentives, financing programs, etc.	5.2.1: Support state and federal tax incentives for investment in or purchase/installation of innovative water technologies.	**Priority #1** Ongoing	Membership fees	EDCs and new organization
	5.2.1: Support state and federal tax incentives for investment in or purchase/installation of innovative water technologies.	Ongoing	Membership fees	Water and wastewater agencies, industry, and state and federal governments

Water Technology Cluster Implementation Plan

Goals/Objectives	Actions	Timeline	Resources	Responsibility
5.3: Encourage local governments to adopt water efficiency and reuse policies.	5.3.1: Encourage local governments to adopt water elements to their general plans	2012	Membership fees	EDCs, new organization, and local governments
	5.3.2: Support general plan changes and the implementation of CalGreen Building Standards Code to encourage the use of recycled water in development projects.	2012	Membership fees	EDCs, new organization, state, and industry
	5.3.3: Encourage the development and use of water efficient technologies, recycled water, rainwater harvesting, and grey water systems in major real estate development projects such as the Concord Naval Weapons Station.	2012	Membership fees	EDCs, new organization, and industry
	5.3.4: Advocate for an innovative water an wastewater treatment technology grant program in California similar to Pennsylvania's, which provides grants to public entities (local governments, public schools, and state colleges) to install or implement new or innovative technologies in their operation.	Ongoing	Membership fees	EDCs and new organization

Water Technology Companies

Company	Location	Sector
APT Water (formerly known as Applied Process Technology)	Pleasant Hill	Water treatment process technologies
Douglas Environmental	Hayward	Skimming and decanting solutions
Dow Water & Process Solutions (affiliated company of The Dow Chemical Company)	Pittsburg	Water and process solutions
Energy Recovery Inc.	San Leandro	Seawater desalination
Ewing Irrigation Products	Fremont	Water management solutions
FLSmidth Pneumapress Filter Corp.	Richmond	Water filtration systems
FogBusters, Inc.	Oakland	Wastewater technology
GE Power & Water	Moraga	Water and process technology
ITT Water & Wastewater U.S.A., Inc.	Fairfield	Water and wastewater technologies
NanOasis, Inc.	Richmond	Desalination and other water purification applications
New Logic Research, Inc	Emeryville	Membrane filtration systems
Porifera, Inc.	Hayward	Water purification
Purfresh, Inc.	Fremont	Crop management products
QED Environmental Systems (part of TestAmerica Holding Company)	San Leandro	Air-powered submersible pumping systems
Shape Inc.	Pleasanton	Sanitation-Hydraulic and Process Equipment
Synagro Technologies, Inc.	Suisun City	Recycler of organic residuals
Veolia Water North America - West, LLC	Pleasant Hill	Water and wastewater services
Westates Carbon (part of Siemens' Water Technologies Division)	Oakland	Water technologies

The companies identified above include only core businesses in the water technology cluster. Specialized vendors, suppliers, and service providers that make up the complete value chain are not listed.

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East Bay Economic Development Alliance
Solano Economic Development Corporation
Tri-Valley Business Council

Education
Contra Costa College
Diablo Valley College
Las Positas College
Los Mendanos College
Solano Community College

Public Utilities
Central Contra Costa Sanitary District
Central Contra Costa Solid Waste Authority
Contra Costa Water District
Delta Diablo Sanitation District
Dublin San Ramon Services District
East Bay Municipal Utility District
West County Wastewater District

Workforce Development
Alameda County Workforce Investment Board
California Workforce Investment Board
Contra Costa County Workforce Development Board
Richmond Workforce Investment Board
Solano County Workforce Investment Board

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Energy Goals, Research Institutes, Collaboration
Collaboration
Investment
Goals, Expand, Objectives, Actions, Talent, Ideas
Water Technologies
Ideas
Development
Implementation, Water Technologies
Manufacturing
Development